Estrategias para publicar efectivamente

Andrés Marrugo, PhD

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https://opi-lab.github.io/seminar/

Marzo, 2022

image credit: calltutors.com

¿Por qué publicar?

Idealmente …

- Para divulgar nuestros hallazgos científicos y descubrimientos con la esperanza de contribuir al conocimiento.

En la práctica …

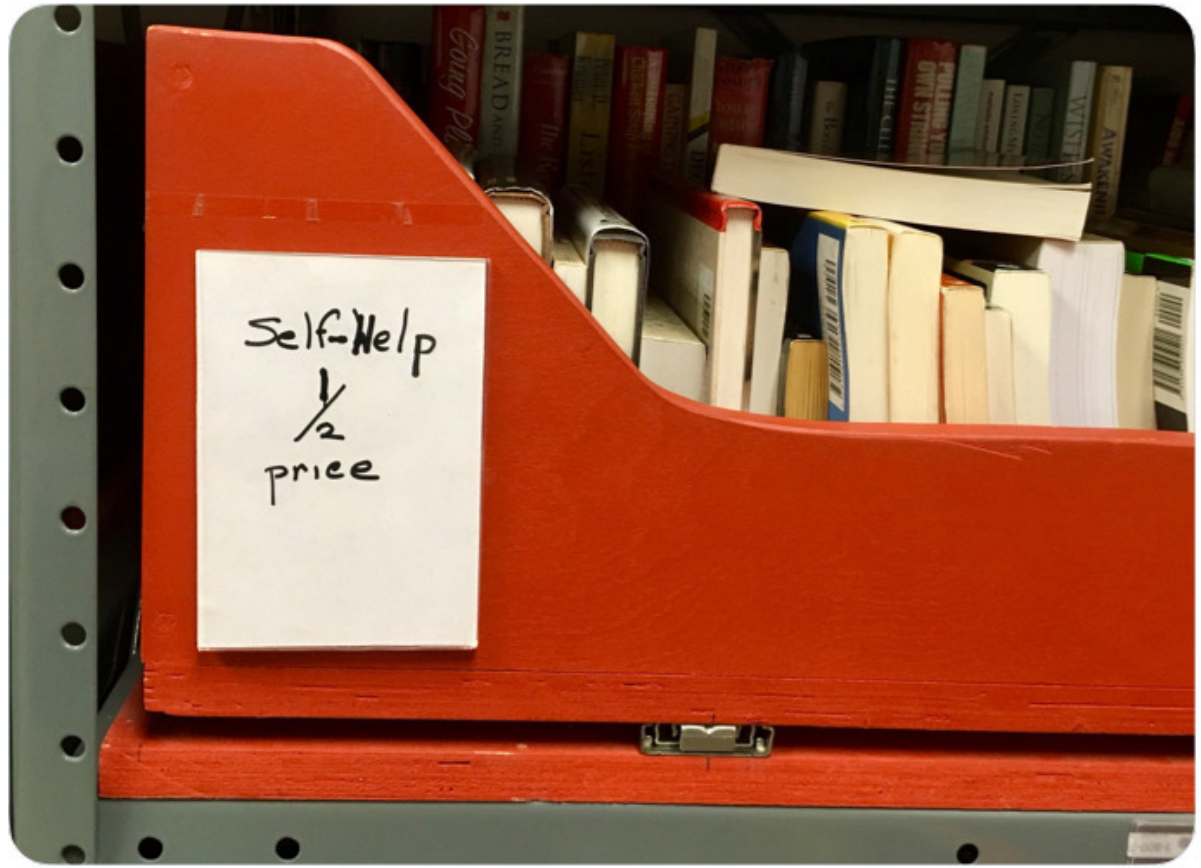
- Para obtener un PhD.
- Para obtener reconocimiento.
- Para obtener financiación/trabajo.
- Prestigio (acreditación, …).
- Etc.

“You are rated by what you produce, not by what you attempt.”

John D. Cook
@JohnDCook

General advice is cheap.

Specific advice is costly.



¿Qué les voy a contar?

1. Antes de escribir.
2. Escribiendo.
3. Antes de enviar.
4. Después de enviar.

Antes de escribir

Para publicar se necesitan insumos

Siempre hay que tener un proyecto

- Financiación externa (Minciencas, SGR,…).
- Financiación interna (proyecto piloto).
- Proyecto solidario.
- Propuesta de tesis de doctorado.
- Proyectos de trabajos de grado (maestría, pregrado).

Resultados parciales, fallidos, avances …

… se convierten en publicaciones.

Para publicar se necesitan insumos

Hay que adaptarse al entorno

- Experimentación de bajo costo.
- Colaboración intra e inter institución.
- Usar datos disponibles públicamente.
- Recursos computacionales gratuitos (Colab, Kaggle, etc.)
- Desarrollo de competencias transversales (métodos estadísticos, modelamiento computacional, etc.)

> “The best thing about being a statistician is that you get to **play** in everyone's **backyard**.”
> John Tukey

Para publicar se necesitan insumos

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- Desarrollo de competencias transversales (métodos estadísticos, modelamiento computacional, etc.)

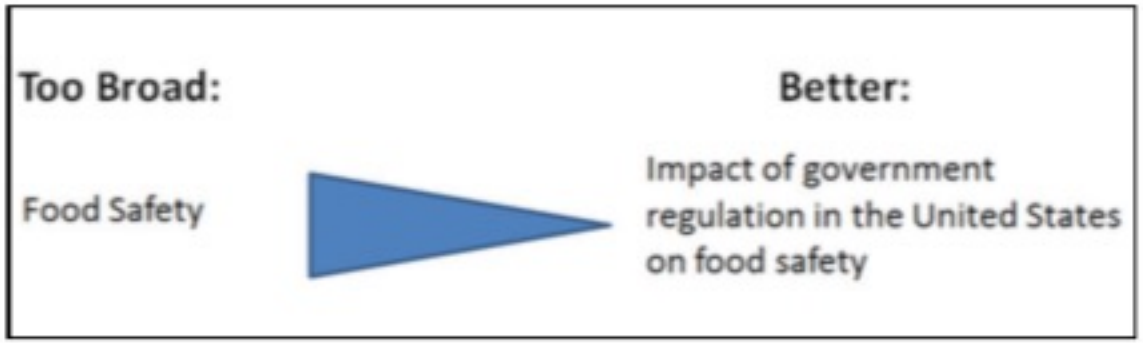
Un doctor se forma para ser investigador, no para ser especialista.

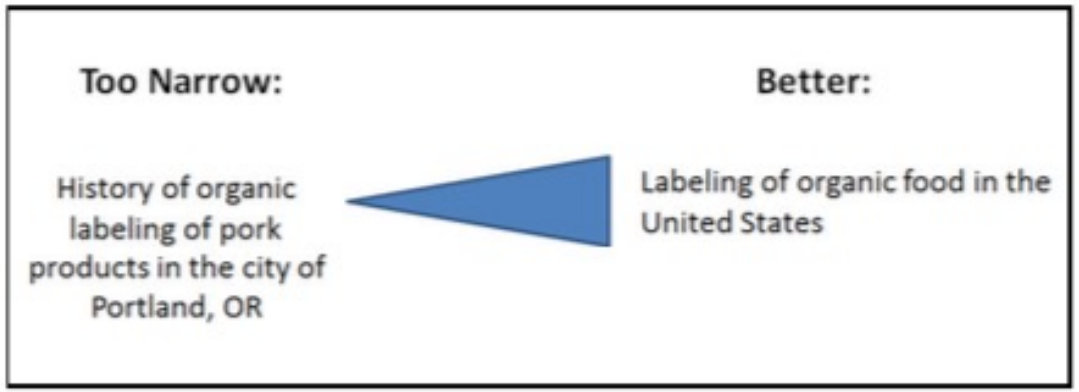
Gundula Bosch, “Train PhD students to be thinkers not just specialists”, Nature 2018

Lo importante es ***ver*** todo como un proyecto.

Planeando el proyecto

1. Encuentra un tema lo suficientemente específico como para que puedas dominar una cantidad razonable de información sobre este en el tiempo que tengas disponible.





Wayne C. Booth et al., The Craft of Research, 2016

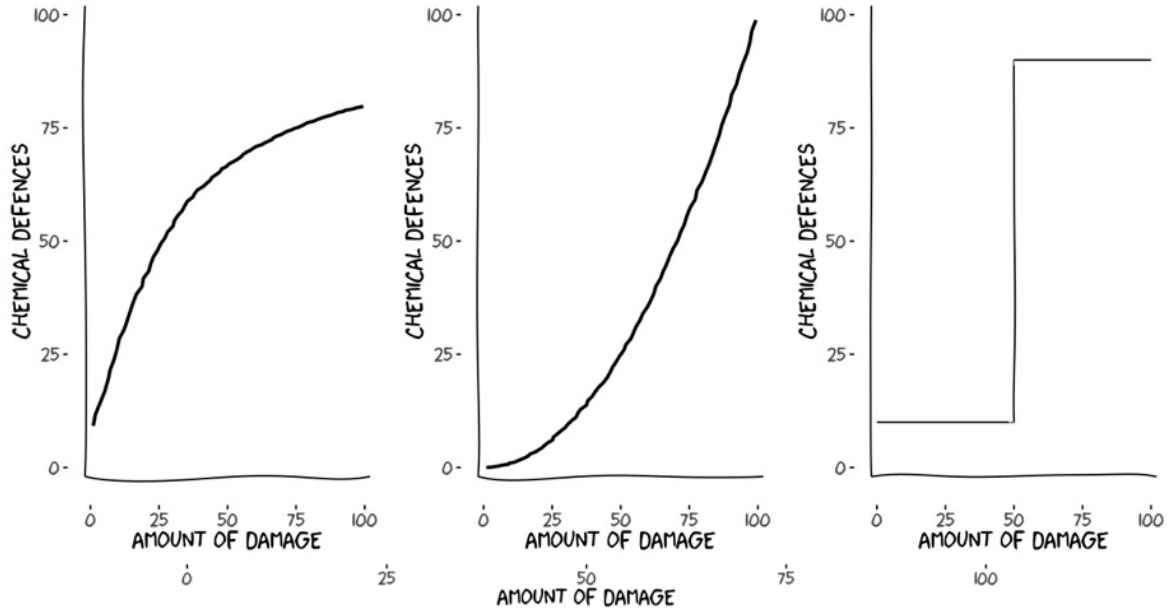
Planeando el proyecto

1. Encuentra un tema lo suficientemente específico como para que puedas dominar una cantidad razonable de información sobre este en el tiempo que tengas disponible.
2. Haz preguntas sobre ese tema hasta que encuentres unas que te llamen la atención.
3. Determina el tipo de información que tus lectores esperan como soporte de tus respuestas.*
4. Determina si puedes encontrar esa evidencia.

Wayne C. Booth et al., The Craft of Research, 2016

Planeando el proyecto

- Imagine you're setting up an experiment into how leaf damage by herbivores influences chemical defense in plant tissues.
- You might start by assuming that the more damage you inflict, the greater the response induced in the plant.
- This sounds perfectly sensible. So, are you ready to get going and launch an experiment?
  - **No, absolutely not.**



[Markus Eichhorn, If you can't sketch a figure then you don't have a hypethesis, 2020]

Planeando el proyecto

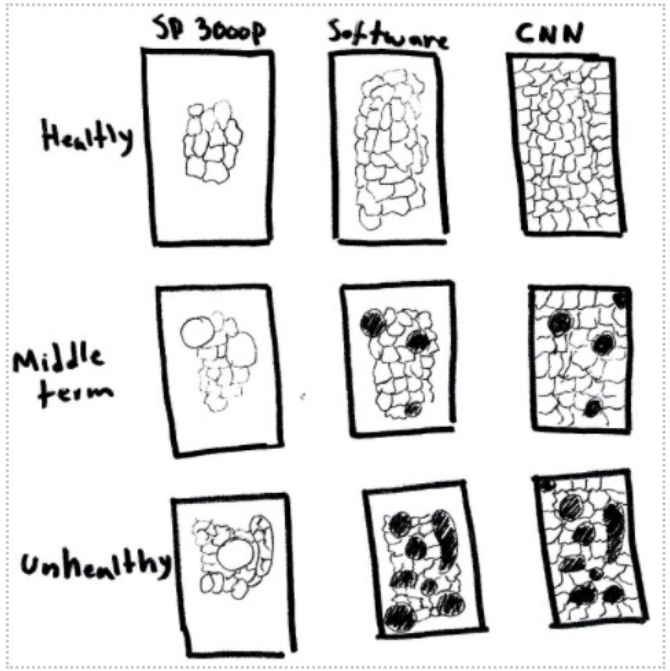
- Even large parts of the Results section can be drafted before you have actual results to put in it.
- It’s very helpful to make mockups of the tables and figures in which you imagine reporting your data—using pilot data if you have it, and what we might call “simulated” data (invented data of the sort you might expect from your work) if you don’t.
- You can do the same for your planned statistical analyses. Doing this as early as possible, ideally before you’ve taken a single measurement, is an excellent way to test-drive the design of your study.

Heard, Stephen B.. The Scientist's Guide to Writing (p. 39). Princeton University Press.

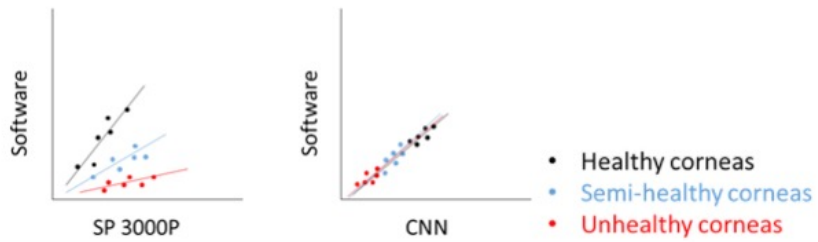
Planeando el proyecto

Results

- Density estimation
- Qualitative and quantitative validation



Cell Density Estimation



2

Juan Sebastian Sierra Bravo

Esta imagen sería para mostrar algunos resultados cualitativos. Como la idea es mostrar una imagen

Andres Guillermo Marrugo h...

Estoy de acuerdo. Habría que rectificar con el doctor Tello los términos más adecuados (creo que

@mention or reply

Juan Sebastian Sierra Bravo

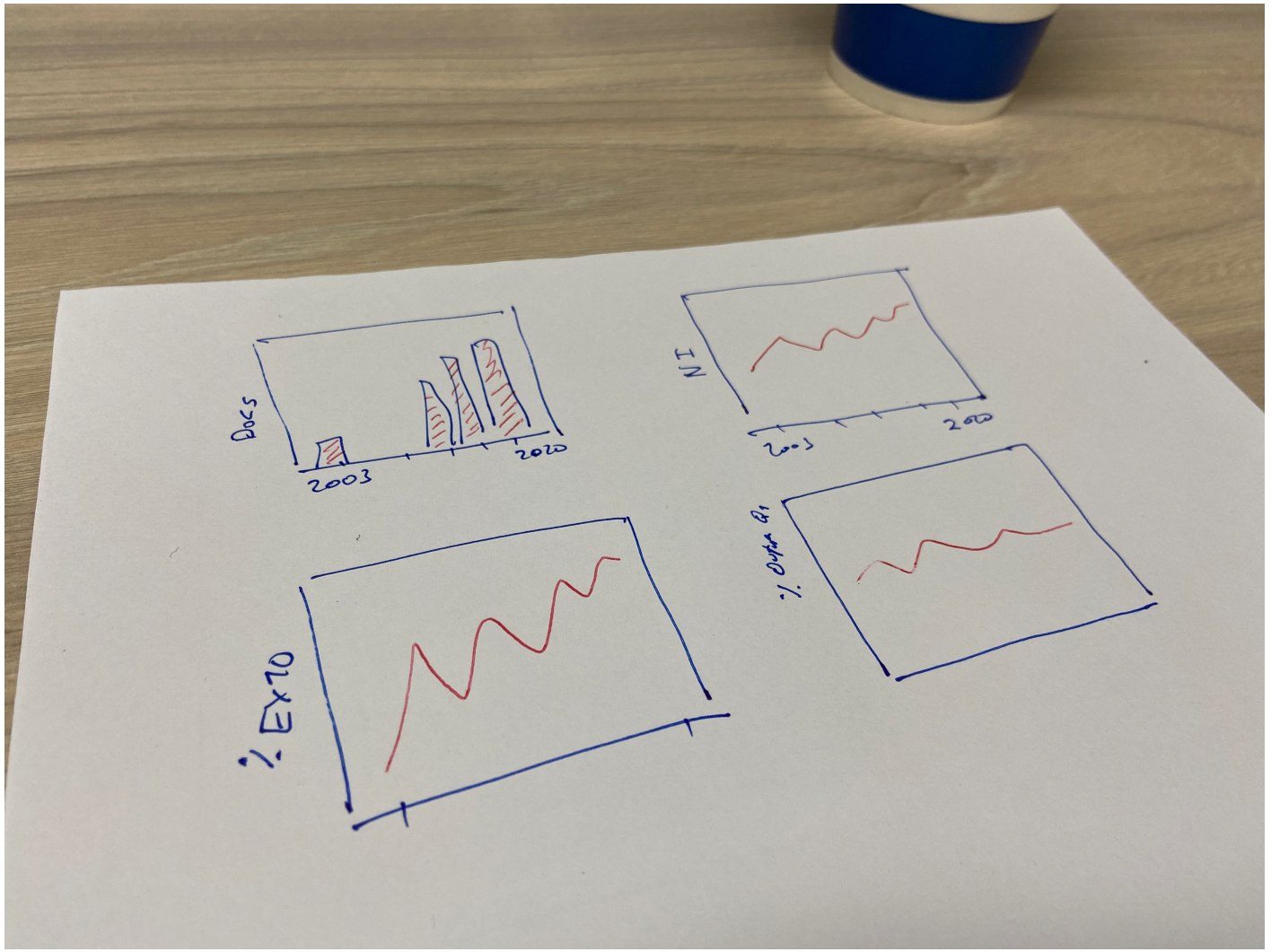
Al estudiar las densidades celulares se pueden plotear estas gráficas y esperaríamos obtener un

3 more replies

Juan Sebastian Sierra Bravo

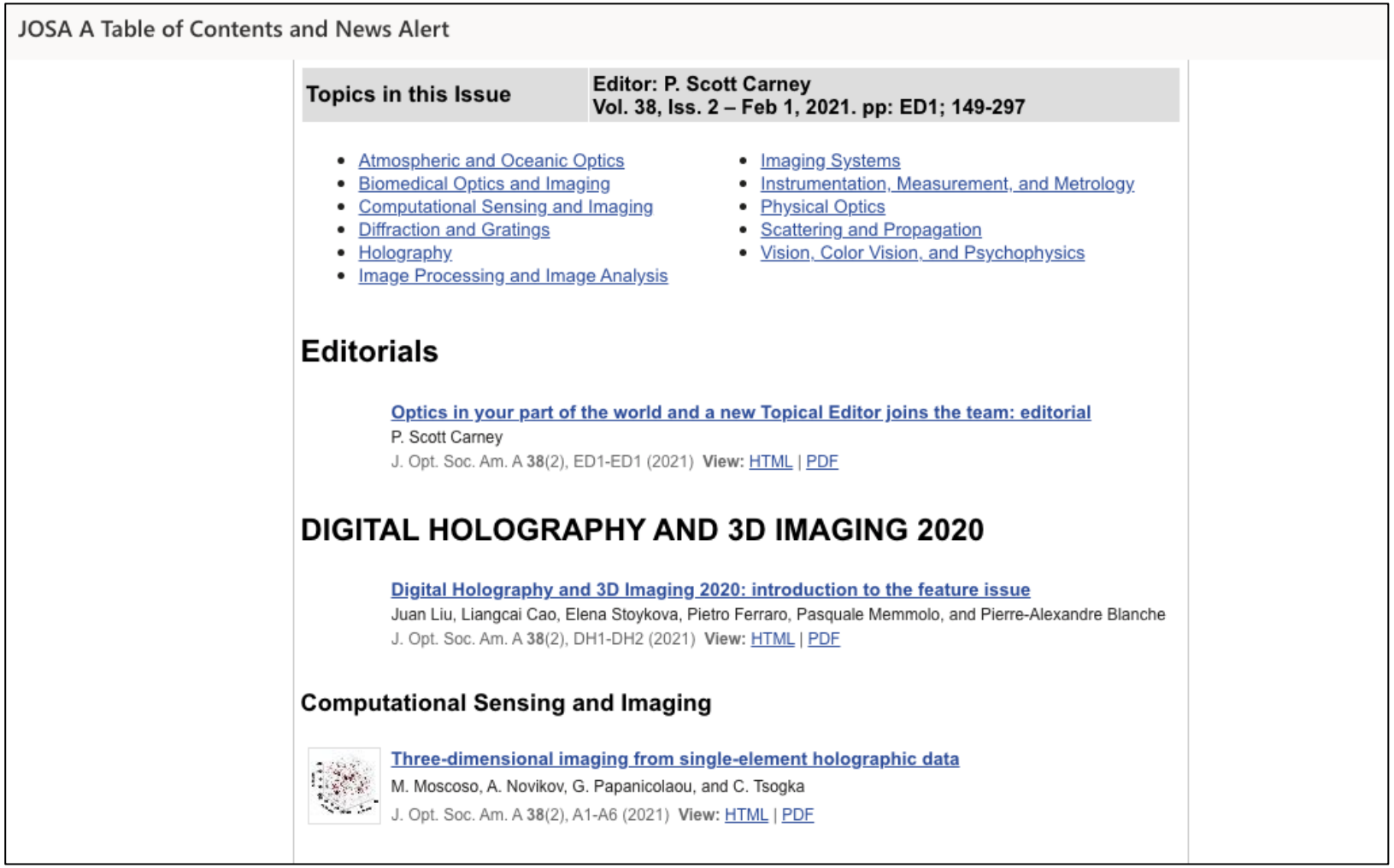
Es correcto. Estos datos los podemos colocar en una tabla como lo hicimos con el trabajo

Planeando el proyecto



¿Qué leer?

Típicamente existen sólo un puñado de revistas relevantes: **TOC alerts.**



JOSA A Table of Contents and News Alert

Topics in this Issue	Editor: P. Scott Carney Vol. 38, Iss. 2 – Feb 1, 2021. pp: ED1; 149-297

- Atmospheric and Oceanic Optics
- Biomedical Optics and Imaging
- Computational Sensing and Imaging
- Diffraction and Gratings
- Holography
- Image Processing and Image Analysis
- Imaging Systems
- Instrumentation, Measurement, and Metrology
- Physical Optics
- Scattering and Propagation
- Vision, Color Vision, and Psychophysics

Editorials

Optics in your part of the world and a new Topical Editor joins the team: editorial
P. Scott Carney
J. Opt. Soc. Am. A **38**(2), ED1-ED1 (2021) **View:** HTML | PDF

DIGITAL HOLOGRAPHY AND 3D IMAGING 2020

Digital Holography and 3D Imaging 2020: introduction to the feature issue
Juan Liu, Liangcai Cao, Elena Stoykova, Pietro Ferraro, Pasquale Memmolo, and Pierre-Alexandre Blanche
J. Opt. Soc. Am. A **38**(2), DH1-DH2 (2021) **View:** HTML | PDF

Computational Sensing and Imaging

Three-dimensional imaging from single-element holographic data
M. Moscoso, A. Novikov, G. Papanicolaou, and C. Tsogka
J. Opt. Soc. Am. A **38**(2), A1-A6 (2021) **View:** HTML | PDF

¿Qué leer?

Típicamente existen sólo unos cuantos investigadores destacados en un área específica: **Publication alerts.**

Scopus
Thu 1/28/2021 3:05 AM
To: Andres Guillermo Marrugo Hernandez

Scopus

Follow Author Alert: Portilla, Javier

Your follow author alert called "Portilla, Javier" has found 1 new result.

Row Number	Document Title	Authors	Year	Source
1.	Computational estimation of point-spread-function field in axially symmetric optical systems	Atienzar, J., Barbero, S., Portilla, J.	2021	*Journal of Modern Optics.*

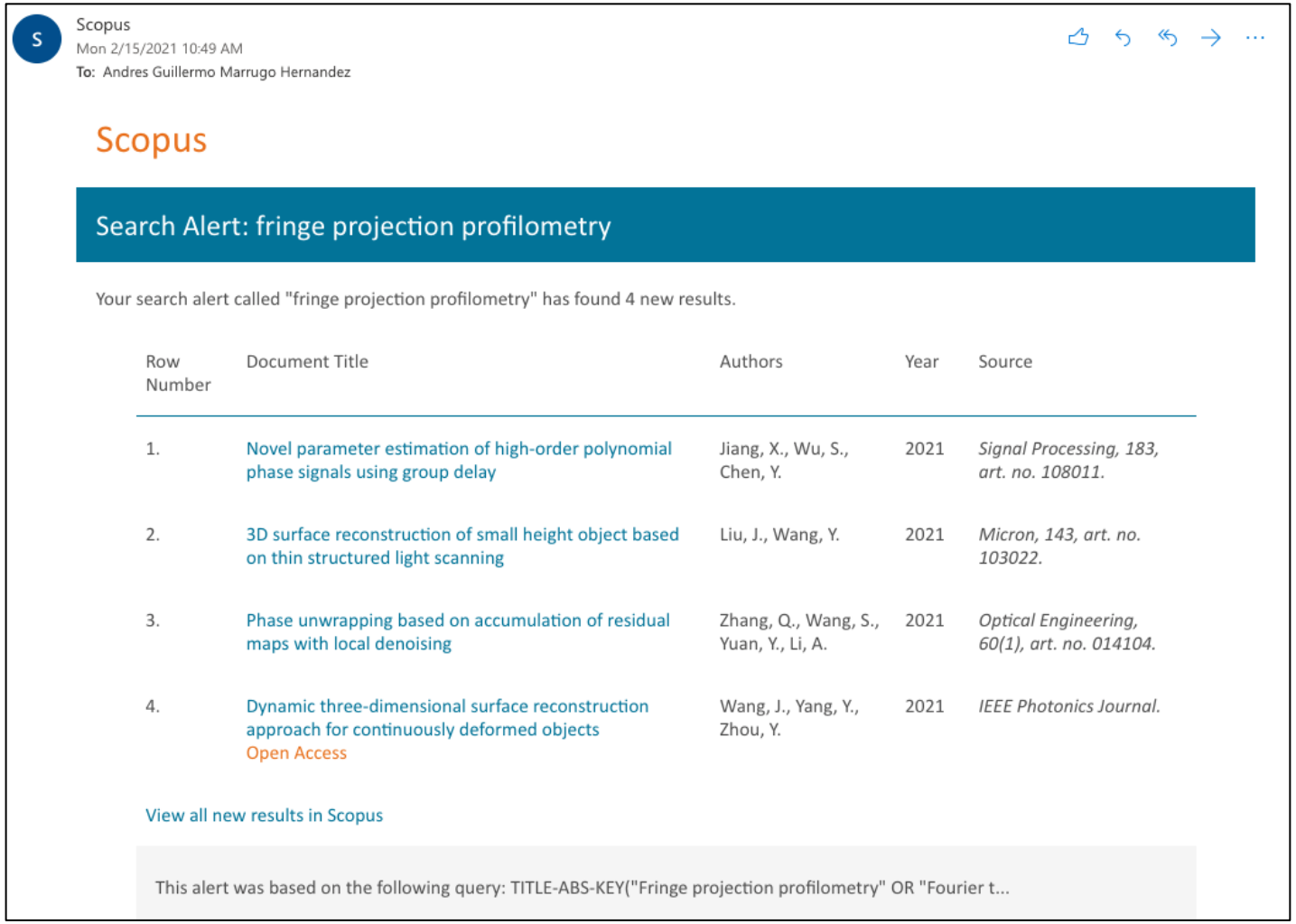
View all new results in Scopus

This alert was based on the following query: AU-ID("Portilla, Javier" 7005009793)

¿Qué leer?

Típicamente existen sólo unos cuantos artículos que te interesan: **Search alert.**

TITLE-ABS-KEY("Fringe projection profilometry" OR "Fourier transform profilometry" OR "fringe pattern analysis" OR "structured light profilometry" OR "Structured light 3D" OR "three-dimensional shape measurement" OR "absolute phase retrieval" OR "phase unwrapping")



Scopus
Mon 2/15/2021 10:49 AM
To: Andres Guillermo Marrugo Hernandez

Scopus

Search Alert: fringe projection profilometry

Your search alert called "fringe projection profilometry" has found 4 new results.

Row Number	Document Title	Authors	Year	Source
1.	Novel parameter estimation of high-order polynomial phase signals using group delay	Jiang, X., Wu, S., Chen, Y.	2021	*Signal Processing, 183, art. no. 108011.*
2.	3D surface reconstruction of small height object based on thin structured light scanning	Liu, J., Wang, Y.	2021	*Micron, 143, art. no. 103022.*
3.	Phase unwrapping based on accumulation of residual maps with local denoising	Zhang, Q., Wang, S., Yuan, Y., Li, A.	2021	*Optical Engineering, 60(1), art. no. 014104.*
4.	Dynamic three-dimensional surface reconstruction approach for continuously deformed objects Open Access	Wang, J., Yang, Y., Zhou, Y.	2021	*IEEE Photonics Journal.*

View all new results in Scopus

This alert was based on the following query: TITLE-ABS-KEY("Fringe projection profilometry" OR "Fourier t...

¿Qué leer?

Típicamente existen sólo unos cuantos artículos que citan mi trabajo: **Citation alert.**

Scopus
Thu 1/14/2021 3:30 AM
To: Andres Guillermo Marrugo Hernandez

Scopus

Author Citation Alert: Citations for Marrugo, Andrés G. (Author Identifier 24329839300)

Your author citation alert called "Citations for Marrugo, Andrés G. (Author Identifier 24329839300)" has found 1 new result.

New document(s) citing

SPUD: Simultaneous phase unwrapping and denoising algorithm for phase imaging, Pineda J. et al., 2020

Row Number	Document Title	Authors	Year	Source
1.	Iterative optical diffraction tomography for illumination scanning configuration	Fan S., Smith-Dryden S., Li G., Saleh B.	2020	*Optics Express, 28(26), pp. 39904-39915.*

¿Qué leer?

En definitiva:

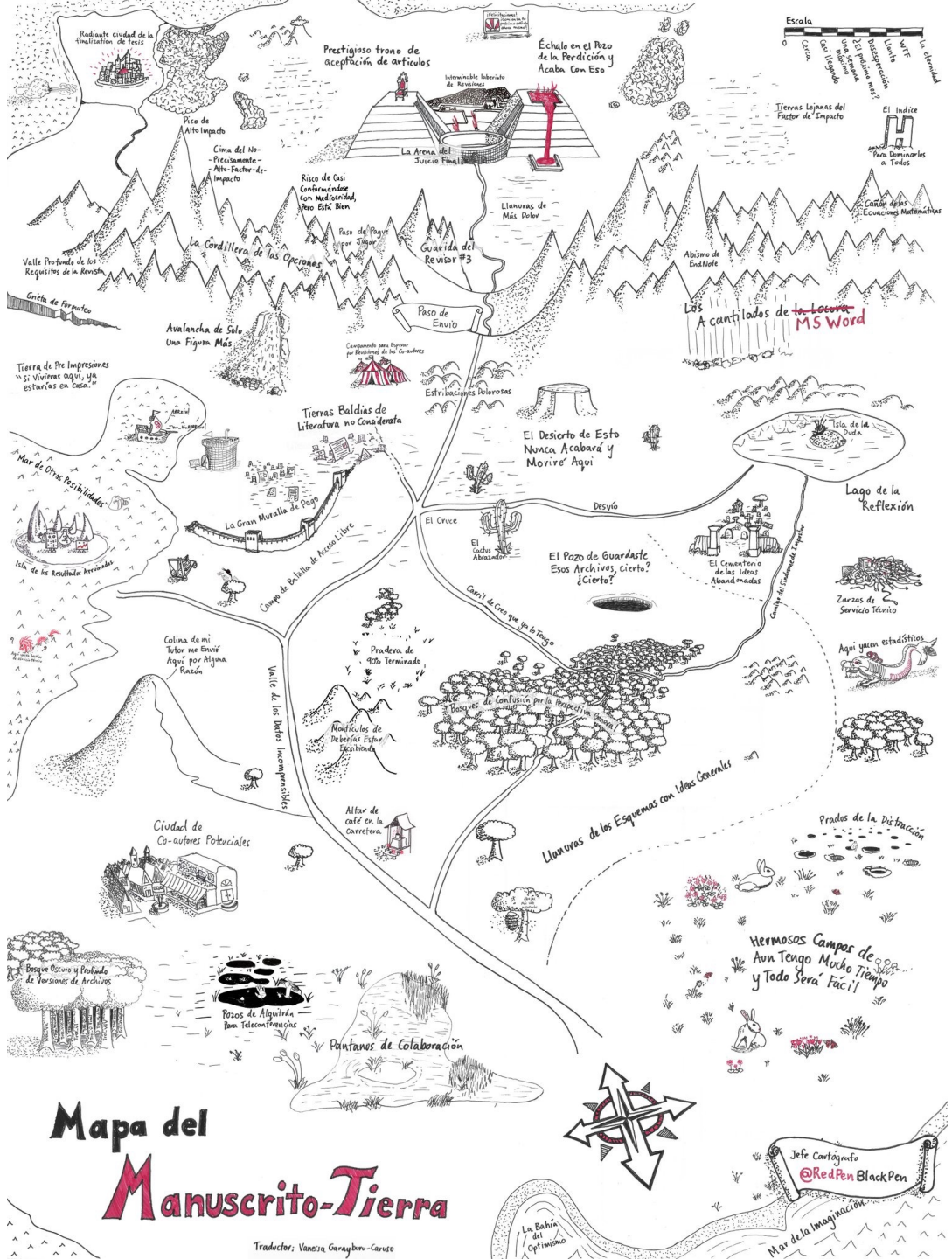
- Ser selectivo, primero revistas de mayor impacto.
- Si encuentras un artículo que te gusta muchísimo, guárdalo y úsalo como modelo.
- Entre más leas más te familiarizas con los “problemas” de un área.
- “Leer” no significa leer todo el artículo (*skim*).
- También es bueno leer “otras” cosas para detectar oportunidades.

¿Cuando comenzar a escribir?

- Sabes quienes son tus lectores, lo que ellos saben y por qué les importa tu problema.
- Sabes cuál es el ethos o carácter que quieres proyectar.
- Puedes esbozar tu pregunta y su respuesta en dos o tres oraciones.
- Puedes esbozar las razones y evidencias que soportan tu afirmación.
- Conoces las preguntas, alternativas y objeciones que tus lectores van a hacer y puedes responderlas.
- Conoces cuando tus lectores pueden no ver la relevancia de una razón con una afirmación y puedes establecer una justificación que las conecta.

Wayne C. Booth et al., The Craft of Research, 2016

Escribir


Escala
0
Cerca
Casi Llegando
Una Semana
Un Mes
2 Meses
Desesperación
Pasione mes?
Listo
WTF
La eternidad
Radiante ciudad de la finalización de tesis
Prestigioso trono de aceptación de artículos
Interminable laberinto de Revisiones
La Arena del Juicio Final
Échalo en el Pozo de la Perdición y Acaba Con Eso
Tierras Lejanas del Factor de Impacto
El Índice
Para Dominarlos a Todos
Pico de Alto Impacto
Cima del No-Precisamente-Alto-Factor-de-Impacto
Risco de Casi Confirmándose Con Mediocridad, Pero Está Bien
Llanuras de Más Dolor
Cañón de las Ecuaciones Matemáticas
La Cordillera de las Opciones
Paso de Pago por Jugar
Guarida del Revisor #3
Valle Profundo de los Requisitos de la Revista
Abismo de EndNote
Los Acantilados de ~~lo Locura~~ MS Word
Grieta de Formateo
Paso de Envío
Avalancha de Solo Una Figura Más
Campamento para Esperar por Revisiones de los Co-autores
Estribaciones Dolorosas
Tierra de Pre Impresiones "Si Vivieras aquí, ya estarías en casa."
Tierras Baldías de Literatura no Conaderata
El Desierto de Esto Nunca Acabará y Moriré Aquí
Isla de la Duda
Lago de la Reflexión
Mar de Otras Posibilidades
La Gran Muralla de Pago
Desvío
El Cruce
El Cactus Abrazador
El Pozo de Guardaste Esos Archivos, cierto? ¿Cierto?
El Cementerio de las Ideas Abandonadas
Camino del Síndrome del Impostor
Isla de los Resultados Arrumados
Campo de Batalla de Acción Libre
Carril de Cosas que Ya le Tengo
Zarzas de Servicio Técnico
Aquí yacen estadísticos
Colina de mi Tutor me Envió Aquí por Alguna Razón
Pradera de "Casi Terminado"
Bosques de Confusión por la Perspectiva General
Montículos de Deberías Estar Escribiendo
Valle de los Datos Incomprensibles
Llanuras de los Esquemas con Ideas Generales
Altar de café en la Carretera
Ciudad de Co-autores Potenciales
Prados de la Distracción
Hermosos Campos de Aun Tengo Mucho Tiempo y Todo Será Fácil
Bosque Oscuro y Profundo de Versiones de Archivos
Pozos de Alquitrán para Teleconferencias
Pantanos de Colaboración
Mapa del
Manuscrito-Tierra
Traductor: Vanesa Garayburu-Caruso
Jefe Cartógrafo
@RedPen BlackPen
La Bahía del Optimismo
Mar de la Imaginación

Mapa del Manuscrito-Tierra

Traductor: Vanessa Garayburu-Caruso

Ciudad de Co-autores Potenciales

Altar de café en la carretera

Llanuras de los Esquemas con Ideas Generales

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La Bahía del Optimismo

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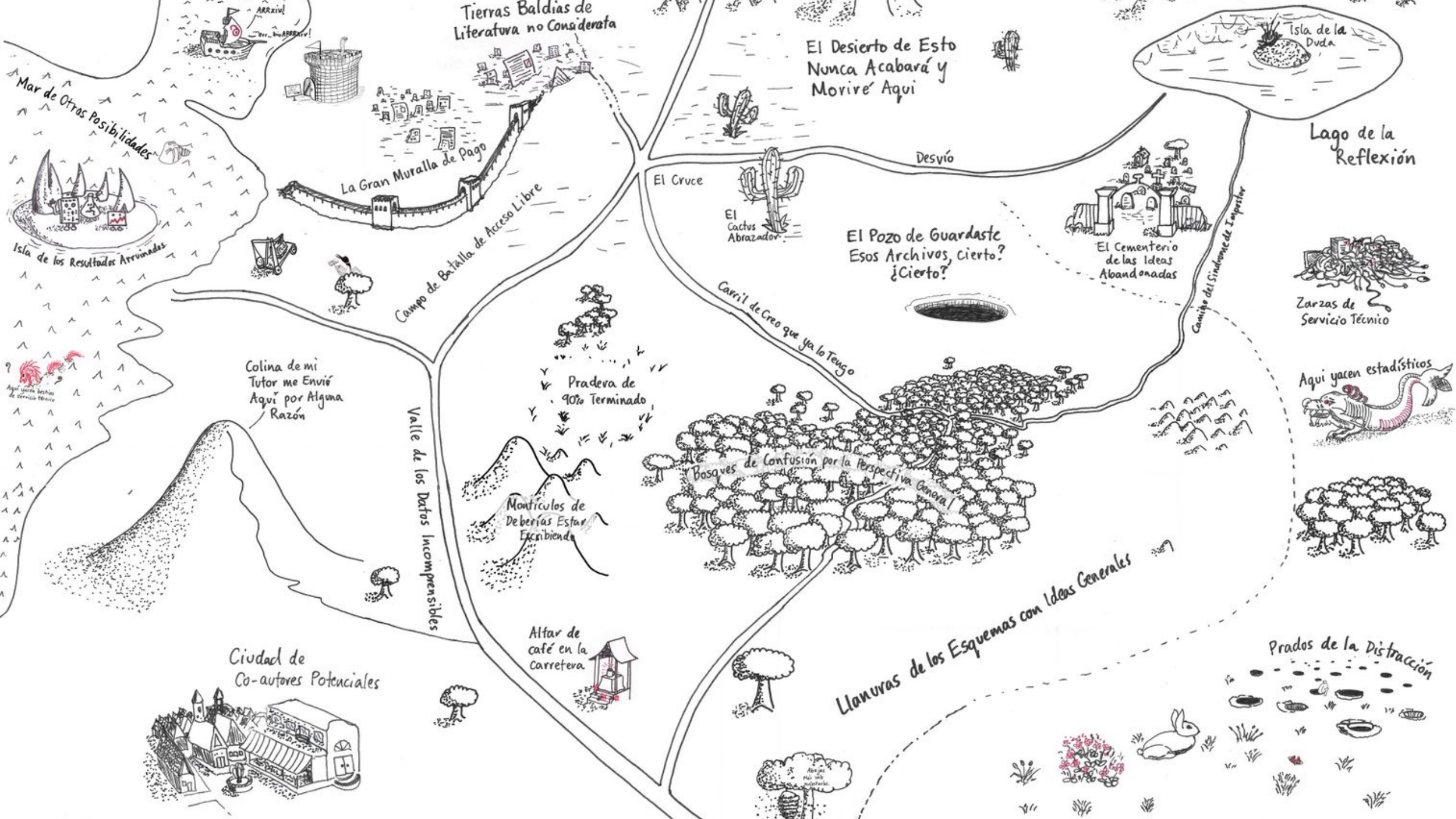
Tierras Baldías de Literatura no Considerata
El Desierto de Esto Nunca Acabará y Moriré Aquí
Isla de la Duda
Lago de la Reflexión
Mar de Otros Posibilidades
La Gran Muralla de Pago
Isla de los Resultados Arruinados
Campo de Batalla de Acceso Libre
El Cruce
Desvío
El Cactus Abrazador
El Pozo de Guardaste Esos Archivos, cierto? ¿Cierto?
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Valle de los Datos Incomprensibles
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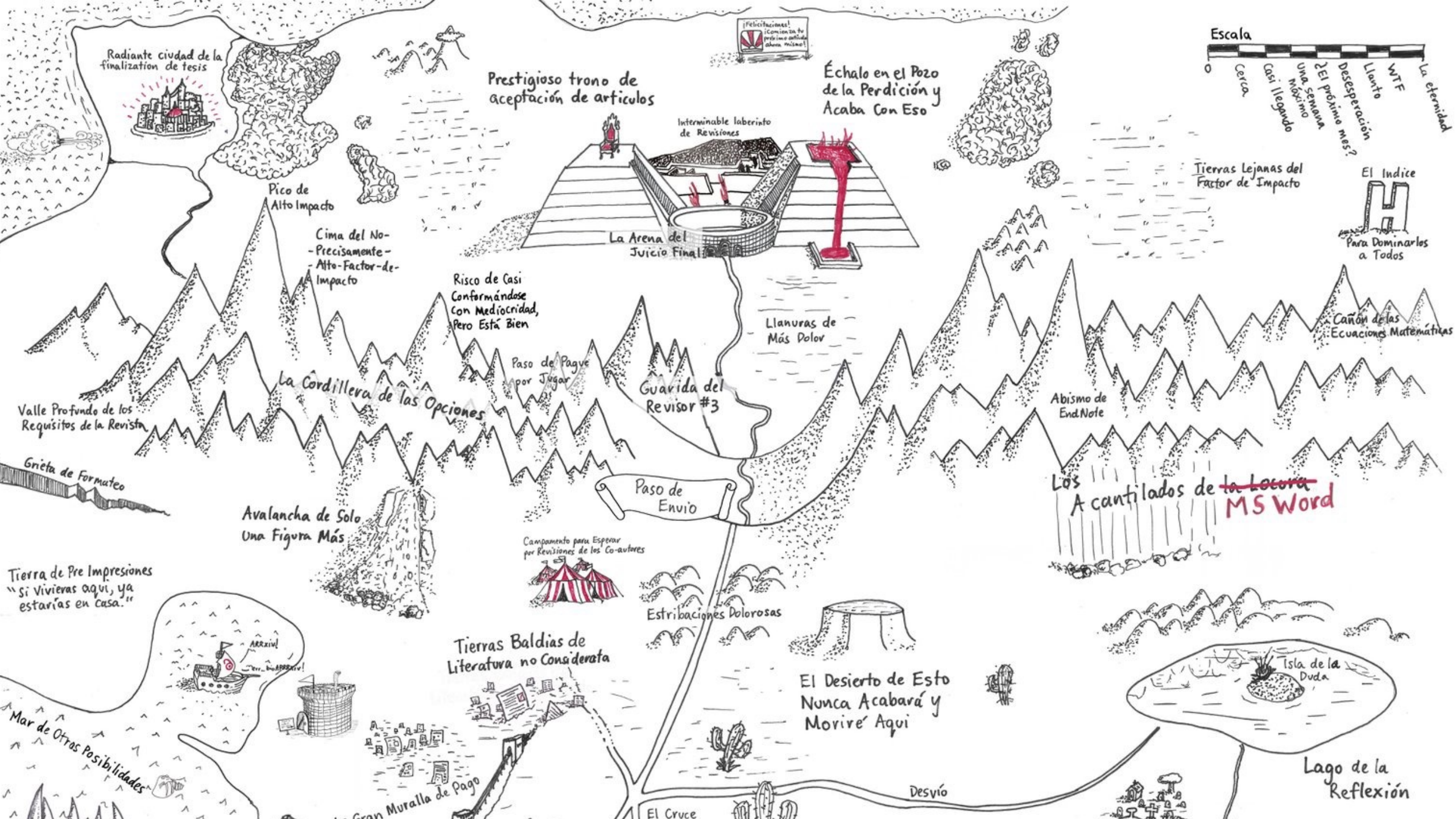
Llanuras de los Esquemas con Ideas Generales
Prados de la Distracción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Una semana Máximo
¿El próximo mes?
Desesperación
Llanto
WTF
La eternidad
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Isla de la Duda
ARRxiv!
Mar de Otras Posibilidades
La Gran Muralla de Pago
Desvío
El Cruce
Lago de la Reflexión


¡Felicitaciones! ¡Comienza tu próximo artículo ahora mismo!
Prestigioso trono de aceptación de articulos
Interminable laberinto de Revisiones
Échalo en el Pozo de la Perdición y Acaba Con Eso
La Arena del Juicio Final
Risco de Casi Conformándose con Mediocridad,

Sobre la escritura académica

- Most scientific writers aren’t born geniuses, but develop facility with writing by deliberately practicing the craft.
- The goal of all scientific writing is clarity: effortless transfer of information or argument from writer to reader.
- It’s enormously helpful for writers to think consciously about their own writing behavior.

Heard, Stephen B.. The Scientist's Guide to Writing, Princeton University Press, 2016.

Sobre la escritura académica

The vast majority of papers published in scientific journals today follow a fairly simple structure. With some variations, most papers use an “IMRaD” format:

There are two main advantages of following the IMRaD structure: it makes it easier for the writer to organize the content of the paper, and it makes it easier for the reader to opportunistically find the information they seek.

Introduction

Method (experiment, theory, design, model)

Results and Discussion

Conclusions

Mack, Chris A. "How to write a good scientific paper." SPIE, 2018.

Introduction: three phases

1. Establish a territory (what is the field of the work, why is this field important, what has already been done?),
2. Establish a niche (indicate a gap, raise a question, or challenge prior work in this territory), and
3. Occupy that niche (outline the purpose and announce the present research; optionally summarize the results).

Introduction: three phases

1. Introduction

The difficulty and costs of manufacturing large calibration targets, and ensuring their metrological dimensions, prevent most calibration methods from being implemented for large scale 3D metrology. However, recent works have shown that a camera or a camera-projector structured light setup can be accurately calibrated in close range with a small calibration target while being focused at a far distance [1–3]. Nevertheless, even in this case the lens distortions are not perfectly modelled for both devices, specially for the projector [4, 5], which results in residual systematic error that impacts the overall accuracy of the 3D imaging system.

To bypass this limitation of the conventional calibration approach, phase to coordinate mapping (PCM) methods have been proposed to relate the 3D metric coordinates from a reliable calibration target to the recovered absolute phase. This approach also implies that the calibration target is precisely positioned in space. However, this costly approach is cumbersome to implement and does not translate well to large scale calibration.

High accuracy large scale 3D measurements have always been a major concern in the industry [6]. However, the typical measurement setup often requires multiple sensors arranged in a multi-view approach [] or robotic arms to perform accurate partial scans that are later stitched together in software [7]. Not only is this approach cumbersome and slow, but it increases the overall costs. To overcome several of these difficulties, An et al. [3] proposed a large-range structured light system calibration composed of a camera and a digital light processing (DLP) projector in which the intrinsic and extrinsic parameter estimation were decoupled. Nevertheless, the extrinsic parameter estimation required an auxiliary low-resolution 3D sensor. Other approaches have been proposed, as in Ref. [8] in which a virtual camera is used to enlarge the FOV without requiring a large calibration target. Although the method is technically sound, it requires positioning precisely a flat mirror between the object and the camera. Lastly, other related works in improving the accuracy of structured light systems are those of Liu et al., [9] in which bundle adjustment is used to refine calibration parameters, Yang et al., [4] and Lv et al., [5] in compensating projector residual distortion with the use of a planar target. However, these methods have all been evaluated

Establish territory

Establish a niche

Marrugo et al, Opt. Express, 2021

Introduction: three phases

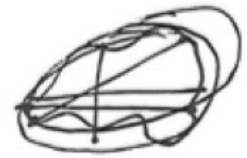
only for small scales or require costly calibration targets. More recently, in Ref. [10] we proposed a hybrid approach to improve the performance of the standard calibration method as proposed by Zhang and Huang [11]. Here, we extend this approach to large-scale calibration.

We propose a method for the calibration of large-scale structured light systems. The method has three stages. First, we obtain the intrinsic parameters of the projector and camera using a small target while the projector and the camera are focused at far distance. Second, we obtain the extrinsic parameters using a low-cost large-format print calibration target (size 800 mm × 1100 mm). Third, we reconstruct all of the poses from the previous stage, we fit a plane for each pose and calculate pixel-wise X, Y, and Z error maps. We then compute new corrected metric coordinates and relate them with the corresponding absolute phase values via a per-pixel third order polynomial function. In the following sections, we will show that this approach is highly flexible and achieves highly accurate 3D reconstructions over a large FOV when compared with the conventional calibration method.

Occupy that niche

Marrugo et al, Opt. Express, 2021

Toward an automatic 3D measurement of skin wheals from Skin prick tests



Introduction

- The need for accurate measurements in SPT.
  - What is SPT?
  - How it is typically measured. (2D). Ruler-based.
    - Manual, labor/time-consuming, error prone, inter- and intra- observer error.
- The need for 3D information
  - Related work
    - Image-based (2D) measurement (limitations)
    - 3D-based measurement → (Dos Santos, 2008) One wheal/Law For
      → (Justo, 2016) Toward automated reading
      → (Justo, 2018) Automated SPT Reading but requires a moving scanning device ... prone to movements ...
      Estimate area but

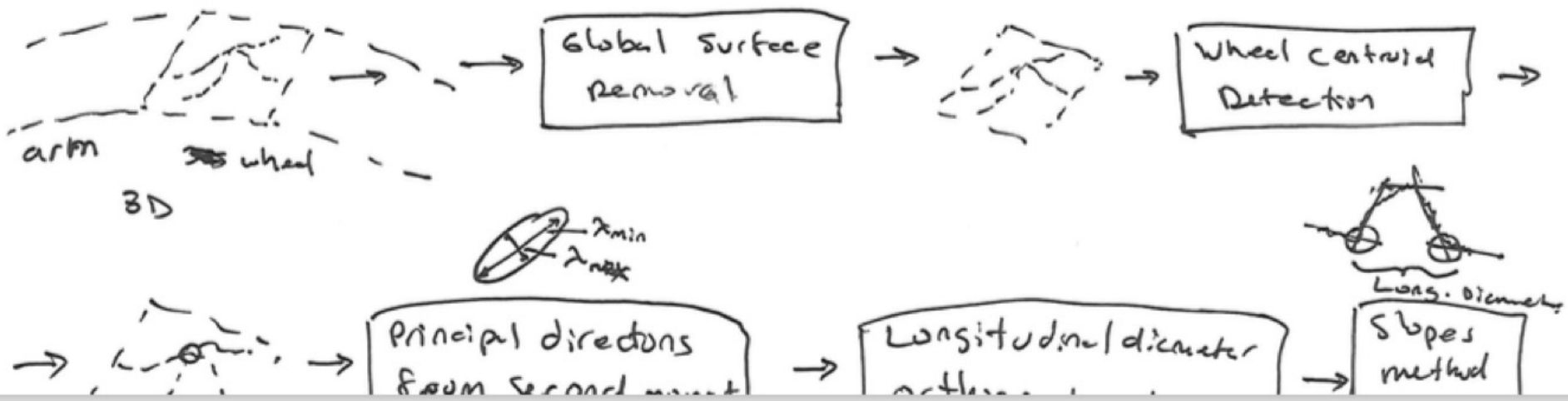
reading

→ (Justo, 2018) Automated SPT Reading but requires a moving scanning device ... prone to movements ... Estimate area but standard method requires diameter.

- How to measure diameter robustly/accurately from ~~skin~~ 3D reconstructed skin wheals? Considering that they are not regular shapes.

Method

- Fringe Pattern projection system (Marrugo, 2019)
- Calibration → Polynomial fit ΦvsZ (Verges, 2018).
  → 3D stereo
- Diameter estimation method



Experiments and Results

- Validation of method
  - Experiments with known objects on flat surface / Curved surface.
    - size/shape.
      - Accuracy
      - Repeatability.
- Skin wheels measurements.
  - Physicin measurments.
  - 3D system measurments..
- Discussion

Conclusions

References

Invited Paper

Toward an Automatic 3D Measurement of Skin Wheals from Skin Prick Tests

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ABSTRACT

The skin prick test (SPT) is the standard method for the diagnosis of allergies. It consists in placing an array of allergen drops on the skin of a patient, typically the volar forearm, and pricking them with a lancet to provoke a specific dermal reaction described as a wheal. The diagnosis is performed by measuring the diameter of the skin wheals, although wheals are not usually circular which leads to measurement inconsistencies. Moreover, the conventional approach is to measure their size with a ruler. This method has been proven prone to inter- and intra-observer variations. We have developed a 3D imaging system for the 3D reconstruction of the SPT. Here, we describe the proposed method for the automatic measurements of the wheals based on 3D data processing to yield reliable results. The method is based on a robust parametric fitting to the 3D data for obtaining the diameter directly. We evaluate the repeatability of the system under 3D reconstructions for different object poses. Although the system provides higher accuracy in the measurement, we compare the results to those produced by a physician.

Keywords: Skin prick test, 3D skin measurement, Fourier Transform Profilometry, 3D medical imaging, allergy diagnosis, skin wheals, fringe projection

1. INTRODUCTION

The Skin prick test (SPT) is the most commonly used method for diagnosing asthma, allergic rhinitis, and food allergies.[1] It is of immediate reading, and reproduces allergic reactions by type I hypersensitivity. These health conditions affect an estimated 30% of the world population[2–4] with incidence on the rise. Therefore, there is a need for continuous optimization of related diagnostic tools and therapies.[5] In the SPT, several allergens are introduced on the skin of the patient simultaneously. A raised area of the skin called wheal or papule appears when there is a reaction. For routine and most study settings, the wheals are measured with a ruler, and the result is usually given as an estimated average diameter or the longest diameter in millimeters.[6] For nearly circular shaped wheals this procedure is straightforward, but wheals often have pseudopodia, i.e., irregular shape, and the diameter measurement leads to error-prone results.[7] Moreover, the manual measurement is time-consuming and suffers from inter- and intra-observer bias, which impedes a fully objective assessment.

The fact that wheals fade quickly also complicates the assessment. The documentation must take place at the time of the reading, and after the wheals have disappeared from the skin, the manual measurements are what remains of the test. One way to overcome this is by taking digital photographs of the test. However, the human visual interpretation of these images produces a significant amount of variation.[8] Even assessing the images through digital image processing is not entirely reliable and has not been sufficiently studied on different skin tones.[9] The fact that wheals are local elevations of the skin brings forth the need for 3D information of the skin surface as a means to measure and assess the SPT.[10]

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Dimensional Optical Metrology and Inspection for Practical Applications VIII, edited by Kevin G. Harding, Song Zhang, Proc. of SPIE Vol. 10991, 1099104 · © 2019 SPIE
CCC code: 0277-786X/19/$18 · doi: 10.1117/12.2519034

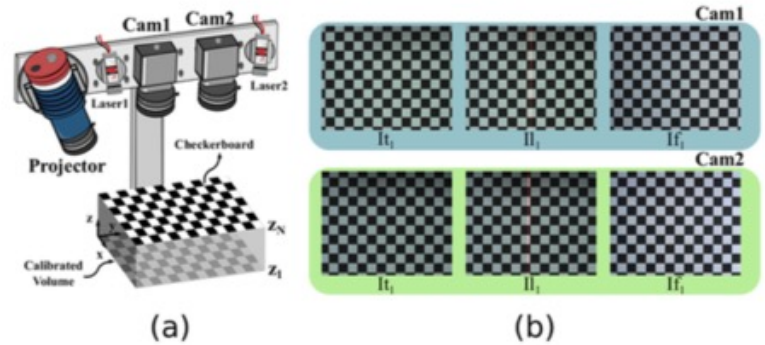

Figure 1: (a) Experimental setup. (b) Acquired images for the calibration procedure.

Dos Santos et al.[11] reported the first use of a 3D acquisition device for digitizing the SPT results. However, they only measured a single wheal in a relatively small field of view (FOV) in the order of 40×30 mm. This initial study showed the advantages of 3D imaging technology for the assessment of the SPT, but it was far from the typical clinical setting of scanning a large skin surface with many wheals. More recently, Justo et al.[12] developed a custom 3D device for automated SPT reading. It is based on the laser-line triangulation principle by moving a scanning head along the forearm of the patient, where the SPT has been applied. Their results are in agreement with the manual annotations by the physicians, but their approach requires a filtering approach that yields a noisy 3D reconstruction in which it is difficult to distinguish the wheals from other artifacts in the reconstruction. Moreover, the fact that it requires a moving scanning head makes the device prone to patient movement.

In this work, we propose a Fourier Transform Profilometry (FTP)[13] 3D imaging system for the 3D reconstruction of the SPT results and a method for the automated measurement of the skin wheals. Our method involves an innovative multi-camera calibration strategy to obtain a wide-field 3D reconstruction of the volar forearm of the patient with the wheals from the SPT. Also, we perform a pyramidal decomposition of the 3D reconstruction to filter out the noise and the global surface of the arm, leaving only the 3D reconstruction of the wheals. The automated measurement is based on a robust parametric fitting to the 3D data of the wheals for obtaining the diameter directly. We evaluate the repeatability of the system under 3D reconstructions for different test objects and in an SPT of a patient. The experimental results show that the system provides higher accuracy and precision in the SPT measurements when compared to the results produced by a physician with the ruler based method. In the following sections, we describe the details of the method, the experiments, the results, and finally the conclusion.

2. METHOD

2.1 Fringe projection system

In Fig. 1(a), we show the configuration of the experimental setup, which consists of an acquisition unit, a projection unit, and a control unit. The acquisition unit is composed of two color cameras Basler Ace 1300-60gc with 16-mm focal length lenses (computar M1614-MP2) at F/1.4. The cameras have a resolution of 1280×1024 and a maximum frame rate of 60 frame/s. The projection unit consists of a LED pattern projector (Optoengineering LTPRHP3W-W) that contains a stripe pattern of 400 lines with line thickness 0.01mm with 12-mm focal length lens (Edmund Optics 58001), and two laser line projectors (SYD1230) with wavelength 650 nm. The control unit is composed of a system of relays that control the turning on and off of the projection unit, and of a computer that allows the control of the relays and the acquisition unit.

Sobre la escritura académica

- Use electronic tools to improve word choice and sentence variety (Grammarly, Microsoft editor, Rpubsure, ProWritingAid).
- The wildcard * is your best friend.
- Collocations are more important than you think.
- Have a thesaurus at hand.
- Phrasebook.
- Keep a journal of useful phrases you've read.
- When writing "mimic" the structure of other papers.
- Ask for help and feedback. Find a mentor.

Sobre la escritura académica: ejemplo

- Accessing a collection of research articles in electronic form can help scholars to choose the right words and vary the structures of sentences in their paper. An online database called the Corpus of Contemporary American English, for example, features a sub-collection of research articles (containing 112 million words) with a search function where users may input an individual word and find out what's commonly put around that word, which will show how others construct their sentences.
- Google Scholar's advanced search function can also help students to imitate sentences in specific journals.
- For example, a Google Scholar search for "increasing attention" source:Nature produces 3,160 sentences that contain this phrase in Nature articles, thus showcasing a range of grammatical structures for novice writers to re-use.

How to write effectively for international journals, Nature Careers, 2019

Qué citar?

- Revistas primero.
- Así como lees autores que te citan, piensa que algunos autores que citas te van a leer.
- Conferencias/proceedings si no existe la versión de revista.
- Se pueden citar patentes y otros documentos técnicos.
- Libros, sólo de investigación. Evita citar textos …
- Evita páginas web y otras que puedan cambiar en el tiempo. A menos que tengan doi.

Abstract estructurado: ejemplo

Counting objects in images is a common task in computer vision. Some of these applications may be counting people in images taken by security cameras or counting trees in satellite images. This work is focused on the counting of corneal endothelium cells in images acquired by specular microscopy, to estimate cell density.

Recently, Convolutional Neural Networks (CNNs) has become the most successful tool for counting, detection and recognizing objects in images. However, this approach requires to train a model with specifics “labeled” datasets (ground-truth), which are hard to get by. For this reason, we developed a tool to obtain these “labeled” datasets of segmented corneal endothelium cells, including images with pathologies.

The tool we developed is a software that allows an expert ophthalmologist to manually modify the cell segmentation calculated by a microscope SP-3000P, to generate the ground truth necessary for the CNNs training. From the obtained images, we will generate density maps by overlapping a normalized gaussian at the center of each cell. This way, by integrating these images, the result will be the number of cells. The density maps will be the training images for our CNNs, so then we will get a probabilistic cell counting rather than a discreet counting.

Abstract estructurado: ejemplo

Background: Automated cell density (CD) estimation in specular microscopy images is a challenging task, especially in situations where conventional single-cell segmentation methods fail.

Aim: To obtain reliable CD values from specular microscopy images of healthy and pathological corneas.

Approach: We developed a software that allows the ophthalmologist to manually modify the endothelial cell segmentation of images obtained with a Topcon SP-3000P specular microscope. From the supervised segmentation, we generate ground-truth cell spatial density maps by overlapping normalized Gaussians and the center of each cell for training a Convolutional Neural Network for automated cell counting.

Results: The supervised segmentation CD estimation differs from the default segmentation CD from the specular microscope up to 20% in images of pathological corneas.

Conclusions: New methods based on probabilistic cell counting for reliable CD estimation in images of pathological corneas are needed.

Mack, Chris A. "How to write a good scientific paper." SPIE, 2018.

Abstract estructurado: ejemplo

Automated cell density (CD) estimation in specular microscopy images is a challenging task, especially in situations where conventional single-cell segmentation methods fail, like in the case of cornea guttata. This work aims to obtain reliable CD values from specular microscopy images of both healthy and pathological corneas. We developed a software that allows the examiner (ophthalmologist, optometrist, or expert technician) to manually modify the endothelial cell segmentation of images obtained with a Topcon SP-3000P specular microscope. From the supervised segmentation, we generate ground-truth cell spatial density maps by overlapping normalized Gaussians at the center of each cell for training a Convolutional Neural Network for automated cell counting. The supervised segmentation CD estimation differs from the default segmentation CD from the specular microscope up to 20% in images of pathological corneas. New methods based on probabilistic cell counting for reliable CD estimation in images of pathological corneas are needed.

J. Sierra et al., J. Phys. Conf. Series, 2020

Antes de enviar

Checklist

- ✓Ask a colleague for feedback.
- ✓Choose wisely (find the right journal).
- ✓Cover letter.
- ✓Killer abstract (often it's the only thing most people read).
- ✓Look for ethical guidelines.
- ✓Formatting guidelines.
- ✓Look for potential reviewers (e.g., people you've met at a conference).

Checklist: Ask a colleague for feedback.

- Seek friendly review first from a close colleague, and then ask for a second friendly review by someone a bit further afield (neutral).
- Make the favor as small as possible—by making reviewing easy.
- Ask specific, concrete questions.
- Corollary: “Could you skim this and see whether you think the order of the subsections makes sense? Just ignore everything else, please.”
- Make every reasonable effort to polish your draft before sending it.
- Offer the choice of an electronic or paper manuscript.
- Allow a reasonable time for the review. Requests for faster review should be accompanied by Coffee or chocolate ☺.
- Double space and use page and line numbers.
- Provide appropriate, polite reminders.
- When you receive a review, read it through right away. But then stop, and do nothing else.

Heard, Stephen B.. The Scientist's Guide to Writing (p. 206). Princeton University Press.

Checklist: Choose wisely (find the right journal).

- Target appropriate journals – highest quality possible.
- Quantitative measures
  - Journal impact factors
  - Journal rankings
- Other considerations
  - Acceptance rates
  - Is it indexed in major citation databases?
- Tools
  - Journal finder.
  - Check your references.
  - Ask your supervisor.

https://journalfinder.elsevier.com

Checklist: Choose wisely (find the right journal).

Open Access Article

Trade-Off Asymmetric Profile for Extended-Depth-of-Focus Ocular Lens

by Lenny A. Romero [1], Andrés G. Marrugo [2] and María S. Millán [3,*]

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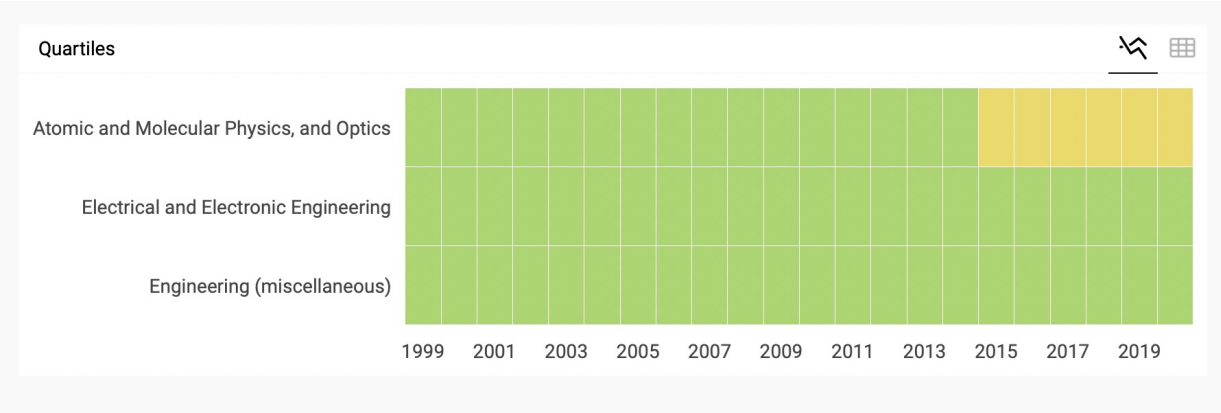


Checklist

- Ask a colleague for feedback.
- Choose wisely (find the right journal).
- Cover letter.
- Killer abstract (often it's the only thing most people read).
- Look for ethical guidelines.
- Formatting guidelines.
- Look for potential reviewers (e.g., people you've met at a conference).

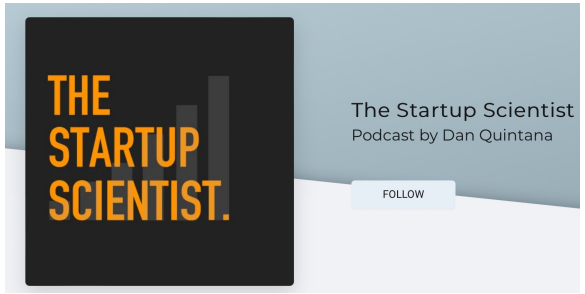
Después de enviar

Todavía queda trabajo por hacer

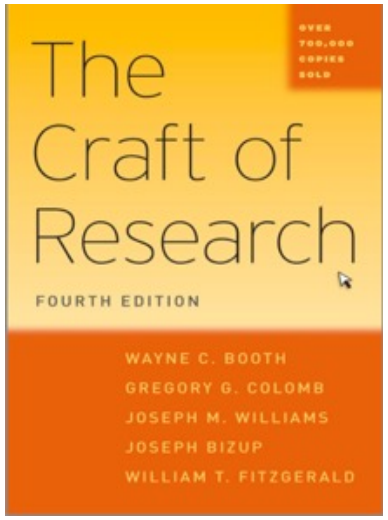
- Seguimiento en la plataforma de la revista.
- Responder a cuestionamientos de los revisores (no siempre hay que hacer todo lo que piden).
- Responder al editor.
- Aceptar que el rechazo es siempre una posibilidad.
- Pide ayuda.

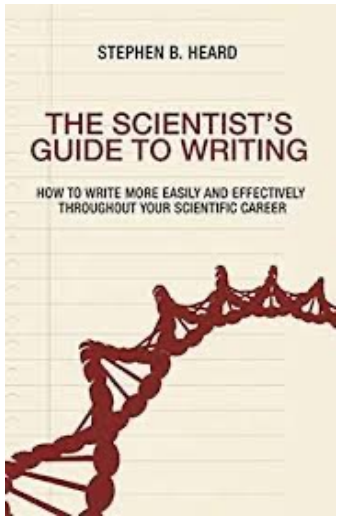
Ejemplo respuesta al revisor, Plos One

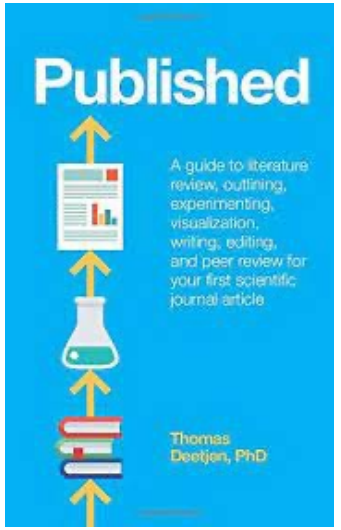
Hay que hacer la tarea

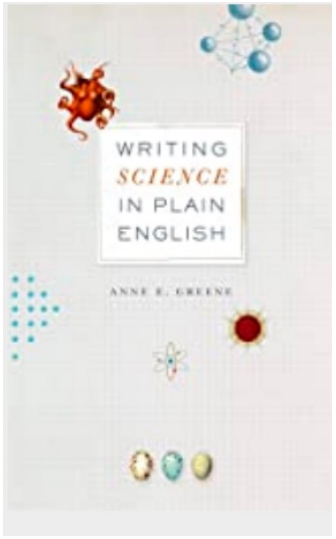


- No todo se aprende en el aula.
- Hay que aprender sobre la marcha.
- Hay que fallar rápido y aprender rápido.
- Hay que tomar riesgos.



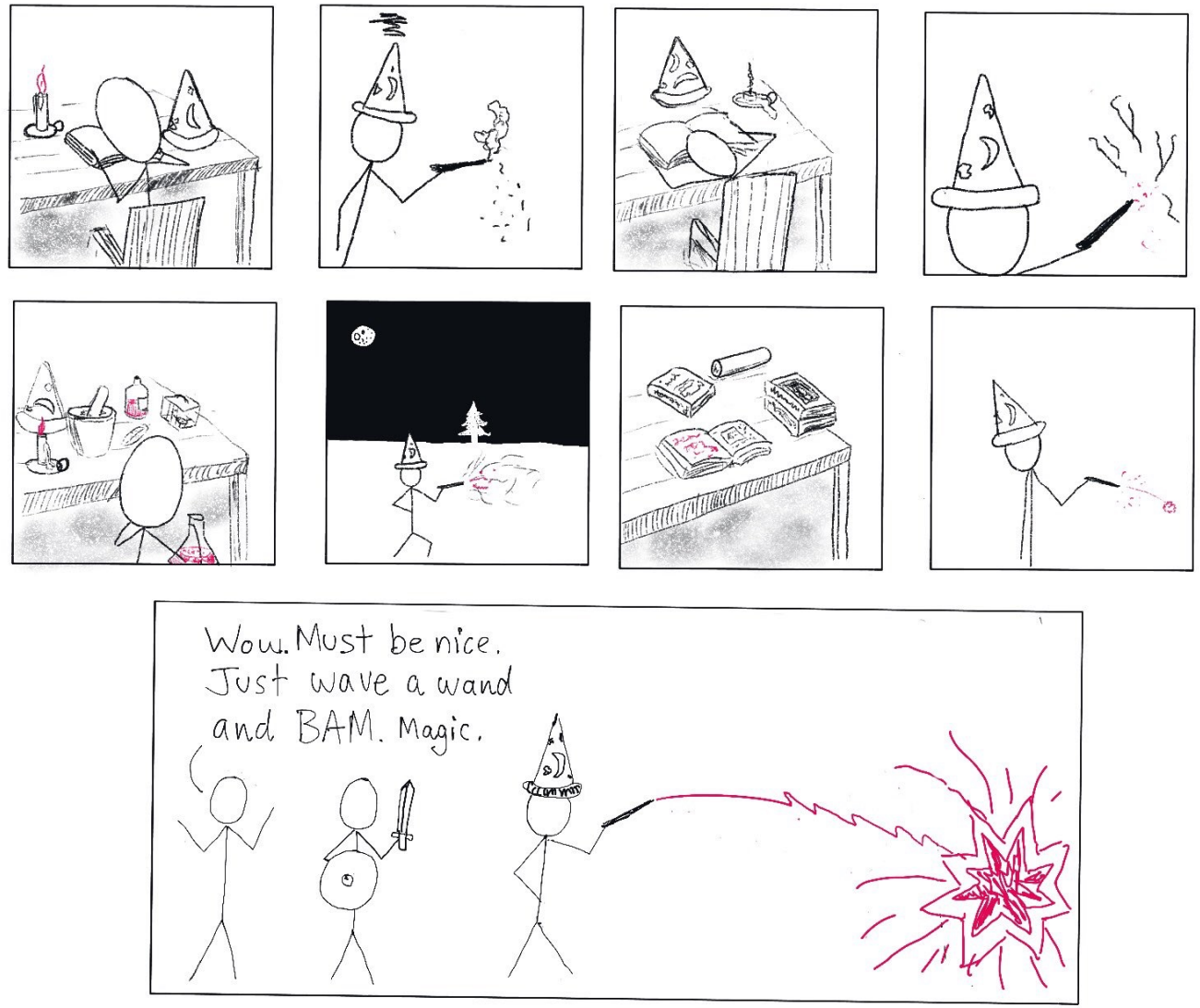






En resumen

- Leer mucho, pero selectivamente.
- Tener un proyecto.
- Interiorizar las preguntas que quiero/puedo responder.
- Tener claro los elementos claves las revistas/conferencias/autores …
- Buscar apoyo y pedir retroalimentación.
- Escribir a menudo.
- Con la experiencia algunas cosas se vuelven más fáciles, otras no tanto.
- Es una experiencia maravillosa y satisfactoria.



Magic: It's just hard work that other people don't see.

@redpenblackpen

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Gracias.